

## Task 3.2

### Quarterly Status Report #1

*for the project entitled*

### Dairy Best Available Technologies in the Okeechobee Basin (SFWMD Contract No. C-11652)

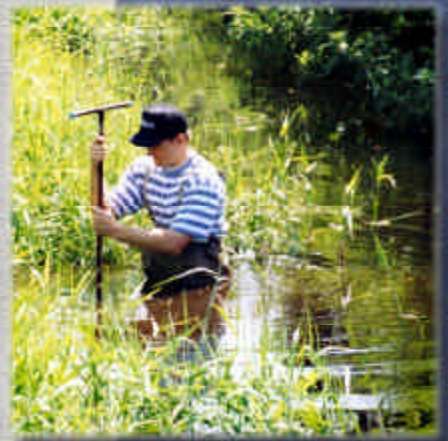
*Submitted by*

**SWET, Inc.**  
Soil and Water Engineering  
Technology, Inc.

*In Association With*

**MOCK•ROOS  
CH2M HILL  
ENTEL**

August 1, 2002



The  
**SWET**  
Team

## **Task 3.2**

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*For the Project entitled*

**Dairy Best Available Technologies  
in the Okeechobee Basin**

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## **Introduction**

This is the first of the required quarterly status reports for the Dairy Best Available Technologies (BAT) project. In general, this project has progressed extremely well with three dairies participating actively. Quarterly progress reports were to begin once Phase II (implementation phase) was authorized to proceed. Authorization was received in January, 2002; however, development of the vendor documents and selection of vendors took longer than anticipated. Therefore, this report was delayed until significant progress was made. This report covers the period from January 1, 2002 to July 31, 2002.

The primary activities during this reporting period have been the acquisition and installation of monitoring equipment and the selection and commissioning of the technology implementation vendors. Both of these activities have progressed well, but were behind the original schedule because of three separate situations that caused unavoidable delays. First, it took almost three months longer than anticipated to receive final acceptance by the participating dairies. Several additional meetings were held with the dairymen to further explain the program and its relationship to other existing and potential future programs in the basin. Second, the delivery of monitoring equipment took approximately two months longer than anticipated; however, no sampling events were missed due to very dry conditions in the basin (i.e., the stations were up and running prior to the first runoff event in over six months). A third delay was caused by extra time needed to obtain final approval for the vendor bid documents. In spite of these delays, the selected vendors for implementing the treatment technology on the farms are currently under contract to complete construction by the fall of 2002.

Table 1 shows the status of each individual task. Additional narrative details are provided below.

## **Phase I Tasks**

The last two tasks of Phase I were resubmitted during the period. These tasks were to provide the final revisions for the reports for Task 2.10 (Evaluation of Alternatives) and Task 2.11 (ANMAs for Selected Dairies). The draft documents were reviewed by the technical review team (TRT) during the spring. The additional reformatting and corrections requested have been completed for both documents. PDF files were provided to the District for both reports and hard copies will be available upon final acceptance of the PDF reports by the District. These revisions were considered low priority because decisions that were based on information in these reports had already been made based on previous submissions of the reports.

## **Monitoring Sites Installation and Flow Measurements**

Since authorization of Phase II, all of the monitoring equipment for 15 sites has been purchased and nine stations were installed on the three selected dairies. The stations were installed to assess the “existing conditions” on the dairies. The monitoring equipment was installed during March and April. Once installed, the flow monitoring equipment was tested to verify its function in the clear water conditions. A problem was detected in this clear water and had been anticipated because Joe Albers had found that clear (lack of TSS) water was not allowing the sonic Doppler

**Table 1. Status Report for Dairy BAT Project**

Task No. Phase I	Task/Deliverables Description	Scheduled Completion Date	Status
<b>1</b>	<b>Development of Goals, Performance Measures and Potential Impacts</b>		
	1.1 Project Kick-Off Meeting	11/9/2000	Completed
	1.2 Develop Draft Goals, Potential Impacts/Performance Measures and Evaluation Method	12/2/2000	Completed
	1.3 Conduct and Submit Literature/Data Search and Summary	1/2/2001	Completed
	1.4 Submit Final Goals, Potential Impacts/Performance Measure and Evaluation Method	2/2/2001	Completed
<b>2</b>	<b>Assessment and Selection of Project Sites</b>		
	2.1 Rank and Select Dairy Sites	2/2/2001	Completed
	2.2 Develop Landowner Agreements	4/2/2001	Completed
	2.3 Develop and Submit Draft QAPP and Monitoring Plans	6/2/2001	Completed
	2.4 Formulate Technology Alternatives and Submit Draft Report	6/2/2001	Completed
	2.5 Finalize and Submit Final QAPP and Monitoring Plans for Existing Dairy Conditions	8/2/2001	Completed
	2.6 Finalize Technology Alternatives and Submit Final Report	8/2/2001	Completed
	2.7 Complete Evaluation of Alternatives and Submit Draft Report	9/2/2001	Completed
	2.8 Develop and Submit Draft ANMAs for the Three Selected Dairies	10/2/2001	Completed
	2.9 Prepare for and Conduct One Stakeholders' Meeting	10/2/2001	Completed
	2.10 Finalize the Evaluation of Alternatives and Submit Final Report	11/2/2001	Final Revised Copy completed and is on FTP site, but hard copies are to be resubmitted in July, 2002
	2.11 Finalize the ANMAs for the Three Selected Dairies and Submit Final Report	11/2/2001	Final Revised Copy completed and is on FTP site, but hard copies are to be resubmitted in July, 2002
	2.12 Governing Board Presentation	11/2/2001	Completed
<b>PHASE II</b>	STOP/GO DECISION POINT for Phase II (Requires Governing Board Approval)		
<b>3</b>	<b>Implementation and Monitoring of Alternatives</b>		
	3.1 Monitor Farm Level P Load		
	3.1.1 Equipment Purchase (up to a total of 9 sites)	11/2/2001	Completed 3/1/02—note that all equipment for 15 sites were purchased to save costs
	3.1.2 Install and Test Monitoring Stations (9 stations assumed)	11/2/2001	Nine stations installed 4/1/02
	3.1.3 Conduct Routine Field Monitoring Activities - TP (52 biweekly trips from RPB)	11/2/2001	Started 5/1/02 - no discharge from any sites but Davie South from fall 2001 until June, 2002
	3.1.4 Laboratory Analyses (assume 9 biweekly samples for 52 trips TP @\$15/sample)*	1/2/2002	Started 5/1/02
	3.1.5 Labor & Lab (9 monthly samples for 24 mo. fecal and TSS @\$45/sample) *	1/2/2002	Started June, 2002
	3.2 Prepare and Submit Quarterly Reports	11/2/2001	This is first quarterly report
	3.3 Develop Draft Vendor Project Documents, Including Bid Specifications and Agreements	1/2/2002	Completed 3/1/02
	3.4 Finalize Vendor Project Documents	3/2/2002	Completed 5/1/02
	3.5 Develop and Submit Draft Implementation Plan for Selected Technologies	3/2/2002	In development, working with individual vendors to submit by the end of July
	3.6 Develop the Draft Monitoring Plan for Selected Technologies	3/2/2002	Will be developed once final implementation plan for each dairy is complete
	3.7 Develop the Final Implementation Plan for Selected Technologies	5/2/2002	Scheduled for July
	3.7.1 Cost of Implementing Vendor Technology (prepare & review bids)	5/2/2002	To be scheduled
	3.7.2 Review and Inspect Vendor Construction Activities	5/2/2002	To be scheduled
	3.7.3 Vendor Payments	5/2/2002	To be scheduled
	3.8 Develop and Submit Final Monitoring Plan for Selected Technologies	5/2/2002	To be scheduled
	3.8.1 Equipment Purchase (up to a total of 6 sites)	6/2/2002	To be scheduled
	3.8.2 Install and Test Monitoring Stations (assumed 6 additional stations)	6/2/2002	To be scheduled
	3.8.3 Conduct Routine Monitoring Activities - TP (34 biweekly trips from RPB)	8/2/2002	To be scheduled
	3.8.4 Laboratory Analyses (assume 6 TP samples @\$15/sample)*	8/2/2002	To be scheduled
	3.9 Prepare for and Attend Biannual Site Meeting (5 qtrs)	8/2/2002	To be scheduled
	3.10 Prepare for and Conduct Public Workshop	11/2/2002	To be scheduled
	3.11 Submit Workshop Minutes	12/2/2002	To be scheduled
<b>4</b>	<b>Evaluation of Alternatives Performance</b>		
	4.1 Prepare and Submit Draft Final Report	9/2/2003	To be scheduled
	4.2 Prepare for and Conduct Public Workshop	10/2/2003	To be scheduled
	4.3 Prepare and Submit Final Report and Associated Project Data	11/2/2003	To be scheduled
	4.4 Prepare and Submit Workshop Minutes	11/2/2003	To be scheduled

transducer to detect water velocities (i.e., not enough solids in the water for the sonic waves to bounce off and return to the receiver). To solve this problem, SWET installed 12V bubblers in front of the transducers during May. This solution appears to be working well, but places an additional drain on the batteries. Several of the sites have required manual recharge of batteries and a second solar panel was added to site 41A because of chronic power problems. We are working with ISCO to reprogram the samplers so that they turn the cell phone off about 80% of the time, which will save battery power. Changing the cell power control also requires an additional cable, which SWET is fabricating. The battery power is being closely monitored and charged batteries are taken to the field each sampling trip in case a low voltage site is encountered.

Though the bubblers have helped significantly, silt is still building up on the transducers. Just a little silt causes the transducers to read incorrectly. Although the transducers are being cleaned each trip, silting continues to be a problem at sites 10D and Davie North and East.

### **Water Quality Data**

The routine sampling visits were initiated in May, 2002, which was prior to the first runoff event of the season. The locations of the monitoring sites are shown in the final monitoring plans for the three dairies (Task 2.5). Figure 1 provides the water quality data results for samples collected through July 31, 2002. The total phosphorus (TP) levels appear to be at or above the levels that have been reported through the District's monitoring program. There are still too few data to statistically define trends, so only a general description of the data is provided below. At Davie dairy the majority of the TP is clearly coming from the Davie North site, which has not been monitored before. It is interesting that the TP levels at Davie Dairy initially fell after the start of the rainy season, but have appeared to rise since then. In contrast, at sites Butler Oaks 41A and Dry Lake 49A, the TP levels appear to be dropping since the start of the rainy season. Site 32B at Dry Lake also has dropped overall but did rise during July.

The P load data from the sites are limited by the flow measurement problems previously discussed. The flow data will be corrected and adjusted as much as possible and presented in future reports.

### **Vendor Selection and Progress**

The other major activity for this reporting period was the selection of the vendors to implement the edge of farm (EOF) treatment technology that was selected during Phase 1. Of the six groups responding to the RFQ, three were short-listed and asked to submit a detailed cost proposal. The short-listed firms were found to be very close in qualifications and presented very similar cost proposals. Therefore it was decided to use all three firms. It was also felt that using three firms instead of one would significantly increase the potential for keeping on schedule. The firms and their dairy assignment are as follows:

Butler Oaks Dairy  
CDM Engineers & Construction, Inc.  
Mr. Dean Carter, P.E., Project Manager

Total P Concentrations at Monitoring Sites

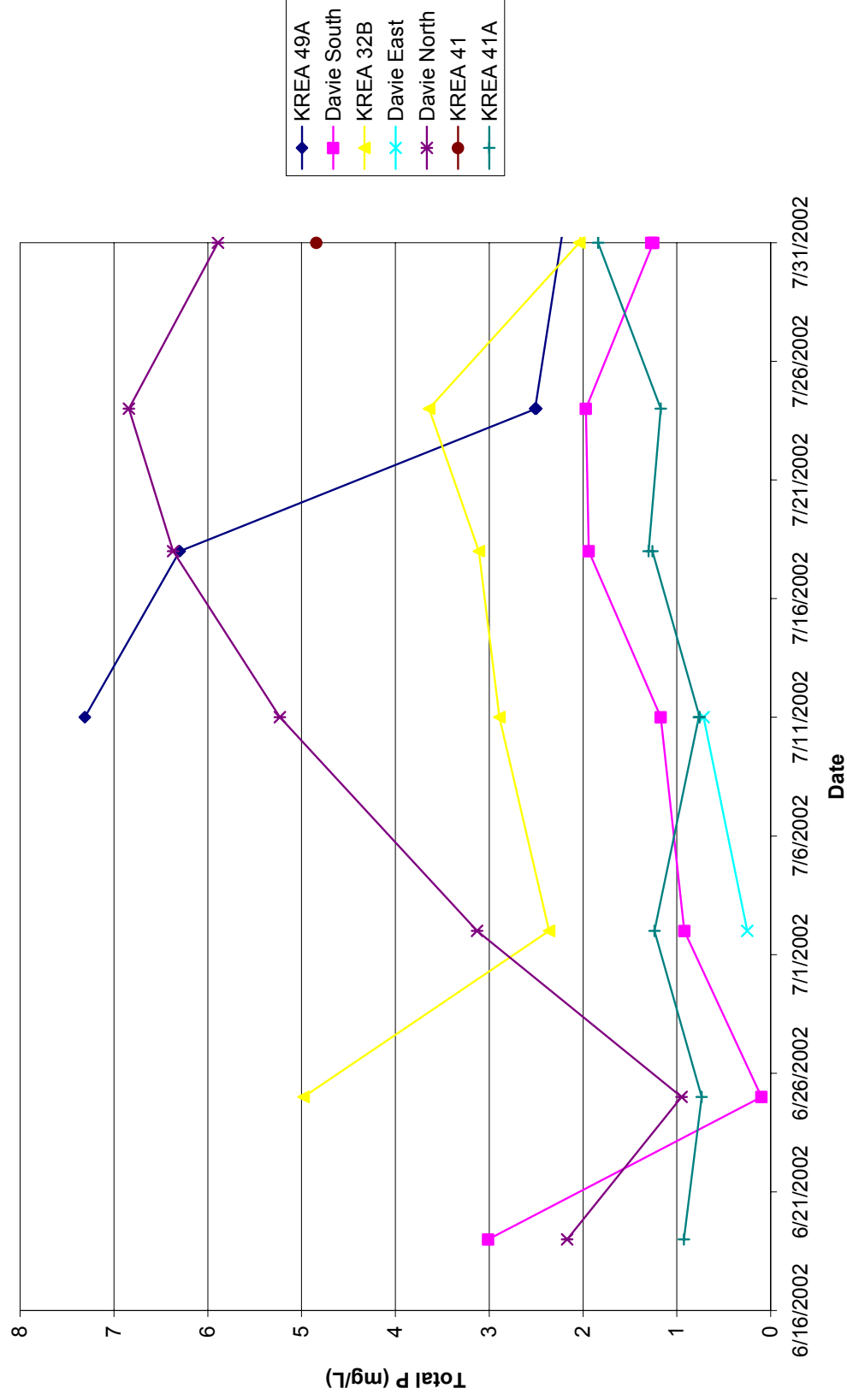


Figure 1. TP concentration data collected from the Dairy BAT sites.



2301 Maitland Center Parkway, Suite 300  
Maitland, FL 32751  
PH: 407-660-2552

**Davie Dairy**

Environmental Research & Design, Inc.  
Mr. Jeffery L. Herr, P.E., Project Manager  
3419 Trentwood Boulevard, Suite 102  
Orlando, FL 32812  
PH: 407-855-9455

**Dry Lake Dairy**

Engineering & Water Resources, Inc.  
Mr. Brian R. McMahon, P.E., Project Manager  
851 Johnson Avenue, Suite 214  
Stuart, FL 34994  
PH: 772-781-6408

As of July 31, 2002, each of the vendor firms has completed its field surveys, conceptual layouts, and 60% design drawings for the dairies. A meeting with the US COE resolved any wetland permitting issues by determining that only a minor impact wetland permit would be required. Wetland and endangered species relocation permits (gopher tortoises were found at Butler Oaks) have been submitted. No additional permitting issues are anticipated. EWR has progressed further, with final construction drawings nearly complete. ERD has completed preliminary jar testing and found low pH conditions may change the chemical injection requirements slightly, but should be a minor additional cost.

All of the vendors has reported that they will be able to construct the EOF systems within the available budget. To date only engineering and surveying costs have been expended. Table 2 provides the expenditures for each of the vendors through July 15, 2002 and estimated percentage of work completed. The percentage completion presented in Table 2 is for Task 3.7.3, which includes the engineering, surveying, and construction of EOF systems.

The draft implementation plans (Task 3.5) for each dairy have been completed and submitted for review. These plans could not be completed until the vendors completed their preliminary system designs. Once the TRT approves these implementation plans, construction will begin.

**Table 2. Invoiced Expenditures for Vendors through July 15, 2002**

<b>Vendor Name</b>	<b>Percentage Completion</b>	<b>Invoiced through July 15, 2002</b>
Engineering & Water Resources, Inc.	15	\$80,605.08
CDM	10	\$56,861.08
Environmental Research & Design	8	\$41,691.08
<b>Subtotal</b>	<b>11</b>	<b>\$179,157.24</b>

### Schedule for the 3<sup>rd</sup> and 4<sup>th</sup> quarters of 2002

Delays have been unavoidable in completing the vendor selection and contracting process. As indicated during the contract negotiations, the original schedule was extremely tight and delays were likely due to wet weather, completing necessary reviews, and startup factors for construction. In fact, the very wet conditions in the basin at this time will prevent any earthen construction work until at least October as indicated in Mr. Bill Berman's August 1, 2002 letter to Del Bottcher. The revised schedule in Table 3 reflects these weather issues and has been agreed to by the vendors. The revised schedule essentially provides for two additional months before construction will begin, which will ensure a better final product.

**Table 3. EOF Implementation Schedule**

Tasks	Schedule 2002						
	June	July	August	Sept	Oct	Nov	Dec
Conceptual design completion							
60% Construction drawings							
Construction approval							
Construction permits obtained							
Final construction drawings							
Start of construction							
Substantial completion							
Completion of construction							
Monitoring plan and installation							
Monitoring started							